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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/054,818	FUKUI ET AL.	
	Examiner	Art Unit	
	Phu K. Nguyen	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 05 November 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-29 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

PHU K. NGUYEN
PRIMARY EXAMINER
GPO:IP 2300

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

RESPONSE TO APPLICANT'S ARGUMENTS:

Applicant's arguments filed on November 5, 2007 have been fully considered, but they are not deemed to be persuasive. Applicant argues that the cited references do not teach the newly added feature "the shape of the virtual objects including a sphere or a cube."

In Figure 3 of the Glorikian reference, where the user is inside a building and moving between various locations, column 7, lines 25-42 expressly states that information may be indexed by geographic location within the buildings, and in 7:42-60, it is clearly stated that these exhibits are located within a three-dimensional coordinate system homed to some point within the building. Moreover, 8:15-35, where moving from one room to another will trigger a change in information, and moving in front of a specific exhibit will cause specific information concerning that exhibit to be displayed. Clearly, in 8:15-25 the virtual space (e.g. the mapping of the exhibits with some arbitrary coordinate system in three dimensions) does exist, and is mapped to a specific facility, where 8:35-39 clearly states that the exhibit list may be updated and maintained by the host of the facility. Specifically, the "virtual space" required is the exhibit map as in 8:15-38 and shown in Figure 3 (at a museum, for example, e.g. art museum as in 7:25-40). It has its own coordinate system 7:50-58. The physical space is the real building. The mapping between the two is the database as discussed in 8:15-38. This clearly means that every exhibit has its own parameters and its own space. Again, the recited shape and location of the virtual object constitutes the volume occupied by the exhibit, e.g. when the user is within a specified distance of the exhibit, the user gets extremely

fine, granular information (outdoors for the rubbish pit example, 5:65-6:15; indoors for an exhibition, getting exhibit-specific information in 8:28-38). The owner of such a facility would lay out the areas for the database to provide information to the user, which would clearly constitute 'Shape and location' for the exhibit in question, and that defined area, region, and/or volume would constitute a virtual object which would be labeled with information concerning that specific object.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... in any other 3D coordinate system from Glorikian disclosure.

For claims 27-29, Applicant argues that the cited references do not teach "when it is determined according to the object information stored in the storage device that the positional relationship between the mobile input device and the specified space satisfies a predetermined condition, the object-information processing device performing at least one of generation, deletion and update of the at least one of the object information and the service information according to the content of the mobile input performed by the mobile input device," which is not correct. Durst teaches when the object locator is outside a parameter (which is equivalent to the claimed "when it is determined

according to the object information stored in the storage device that the positional relationship between the mobile input device and the specified space satisfies a predetermined condition") a mobile device is utilized to create, update, and generate virtual objects such as defining parameter/boundary for bounding region which is equivalent to the claimed "the object-information processing device performing at least one of generation, deletion and update of the at least one of the object information and the service information according to the content of the mobile input performed by the mobile input device."

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 9-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glorikian (US 6,343,317) in view of Giniger et al (US 6,199,045 B1), Harma et al (US PGPub 2002/0111188 A1), and Steinberg et al (US 6,433,818 B1).

As to claim 1,

A service providing system for correlating service to a virtual object which is data having spatial information, relating to shape and location, constructed on a computer corresponding to a specified space, for disposing the virtual object in a virtual space

associated with an actual space, and for providing service corresponding to the specified space according to a positional relationship betweenJa movable mobile member and the virtual object, comprising: (Glorikian clearly teaches that areas or more specifically volumes (e.g. see 7:45-60) that have properties. See 5:40-6:40, where for the example of Jamestown, the user would be sent information specific to the area that the user is located inside; see for example the Martin's Hundred area, where when the user approaches a specific object or location (e.g. rubbish pit), the user would get very specific information when the user is within a virtual space associated with a virtual object, e.g. 6:1-5 states that when the client is in the general Martin's Hundred area, they get general information, but when they move closer to the house or the rubbish pit they get more and more specific information. Clearly, in 2:9-37, the data repository distributes data based on determined position, and in 2:38-45, the device stores information cross-referenced to geographic position in a data repository.)

-A.storage device that associates object information related to the spatial information of the virtual object with service information specifying a service content, and that stores the object information and service information; and (Glorikian discloses a database, which is specifically a storage device, for storing information about all the exhibits at a museum that may be indexed according to geographic location in the buildings (7:36-42). Clearly 9:59-10:10 clearly sets forth that the usermay store such information locally. Further, 7:25-42 expressly states that information may be indexed by geographic location within the buildings, and in 7:42-60, it is clearly stated that these exhibits are located within a three-dimensional coordinate system homed to some point within the

building~ Note ESPECIALLY 8:15-35, where moving from one room to another will trigger a change in information, and moving in front of a specific exhibit will cause specific information concerning that exhibit to be displayed. Clearly, in 8:15-25 the virtual space (e.g. the mapping of the exhibits with some arbitrary coordinate system in three dimensions) does exist, and is mapped to a specific facility, where 8:35-39 clearly states that the exhibit list may be updated and maintained by the host of the facility.)

-A location-information acquisition device that obtains location information used. for identifying a location of the mobile member, (4:40-62 of Glorikian, teaches of including a GPS device on a mobile unit for determining the location of the unit, and additionally in Figure 2 there is secondary receiver 77 - see 7:56-8:35, where secondary receivers for establishing positions indoors when GPS signals cannot be received)

-Wherein, when it is determined according to the location information obtained by .the location-information acquisition device and the object information stored in the storage device that the mobile member is disposed in an inside area ofthe specified space identified by the shape and location of the virtual object, service corresponding to the specified space is provided according to the service information stored in the storage device, (8:16-19 and 8:21-26 of Glorikian, teaches of determining the location of a user and returning information to the user relating to the various exhibits according to geographic and spatial positioning. 7:36-42, states, "For the purposes of this invention, information about all of the exhibits at this museum may be indexed according to geographic location in the buildings, which may be accessed selectively if one has a portable unit requesting such information from a database while simultaneously

reporting the device's relatively precise position in the museum." Therefore, providing information to a user based upon their position in the museum is equivalent to providing service corresponding to the specified space. 6:63-67, 7:1-15, describe the various services available to a user with regard to location information. Thus, the information provided to a user is provided according to the service information stored in the storage device. Additionally, the service information provided by Glorikian is indexed according to positional information and accessed according to the location of the user, thus reading upon determining according to the location information obtained by the location-information acquisition device and the object information stored in the Storage device that the mobile member is disposed in an inside area of the specified space identified by the shape and location of the virtual object.) (Note further that in Figure 3, there are several exhibitions on that particular floor being shown - e.g. they have a common reference location schema (coordinates) - see 7:45-60. Next, note Glorikian states clearly "In other embodiments there may be a three-dimensional reference system, allowing for differentiation of exhibits of a multi-storied exhibit site, or any known sort of planar or spatial reference." This clearly shows that location information is obtained in three dimensions.)

-The object information including information providing a time duration for construction of a virtual object. (Glorikian would suggest that events in a facility could change over time (e.g. visiting exhibits in a museum (7:34-36), where the database containing such information is maintained and updated by the owner of the facility and/or the provider of the service (8:29-38). Glorikian teaches that such information is downloaded from the

wireless network (4:63-5:10).)(Giniger teaches a mobile system that provides perishable information to the user - that is, it is updated as events occur, and thereby avoids becoming outdated (20:54-65))

Glorikian teaches most of the limitations of the instant claim but does not expressly teach providing a time duration for construction of a virtual object. At most it can be regarded as teaching that events have durations and that information can be changed over time. The Giniger reference clearly teaches providing a user with location-based information, where such information includes perishable information concerning a location, which is known to expire. As such, this would at least suggest that such information could be provided with time duration. The word "perishable" is defined by a dictionary as "subject to decay, ruin, or destruction" or as "something subject to decay or spoilage" with the implication, as supported by Giniger that such information can expire. It would have been obvious to one of ordinary skill in the art to provide exhibit-specific information in perishable format to the devices, where when an event changed or moved (e.g. moving of exhibits within a museum, as per the Glorikian example, such a visiting exhibition) the information sent to the portable Unit would have such an expiration date to it, such that the server would update and provide new information when that information expired. As such, it would have been obvious to one of ordinary skill in the art to combine Glorikian with Giniger to achieve the above benefit because updating such information prevents the user from obtaining stale or old information, as explained in 20:54-65.

This discussion is in reference to Figure 3, where the user is inside a building and

moving between various locations. Further, 7:25-42 expressly states that information may be indexed by geographic location within the buildings, and in 7:42-60, it is clearly stated that these exhibits are located within a three-dimensional coordinate system homed to some point within the building. Note ESPECIALLY 8:15-35, where moving from one room to another will trigger a change in information, and moving in front of a specific exhibit will cause specific information concerning that exhibit to be displayed. Clearly, in 8:15-25 the virtual space (e.g. the mapping of the exhibits with some arbitrary coordinate system in three dimensions) does exist, and is mapped to a specific facility, where 8:35-39 clearly states that the exhibit list may be updated and maintained by the host of the facility.

Specifically, the "virtual space" required is the exhibit map as in 8:15-38 and shown in Figure 3 (at a museum, for example, e.g. art museum as in 7:25-40). It has its own coordinate system 7:50-58. The physical space is the real building. The mapping between the two is the database as discussed in 8:15-38. This clearly means that every exhibit has its own parameters and its own space. Again, the recited shape and location of the virtual object constitutes the volume occupied by the exhibit, e.g. when the user is within a specified distance of the exhibit, the user gets extremely fine, granular information (outdoors for the rubbish pit example, 5:65-6:15; indoors for an exhibition, getting exhibit-specific information in 8:28-38). The owner of such a facility would lay out the areas for the database to provide information to the user, which would clearly constitute 'Shape and location' for the exhibit in question, and that defined area, region,

and/or volume would constitute a virtual object which would be labeled with information concerning that specific object.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

Glorikian does not expressly teach an input device for configuring the database, but this is fairly suggested as described in the Remarks for Arguments. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Glorikian to have an input device to update the database for at least the reasons set forth in the previous Office Action in the Response to Arguments section. Glorikian and Giniger fail to expressly teach the service including restriction of a specific action,

Harma teaches that it is incontrovertible fact that in the art at the time the invention was made, mobile telephones included digital image devices, e.g. digital cameras, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the portable device of Glorikian/Giniger to include such a camera on the mobile device for the reasons for including such a device include

allowing the user to obtain images at a desired point and transmit them over a data network, video conferencing, the utility of integrating plural devices into one form factor, etc [0003-0008].

Glorikian, Giniger, and Harma all fail to expressly teach, but Steinberg teaches the service including restriction of a specific action. Mobile devices, particularly of the type used by Glorikian, can be used by, say, tourists in a theme park or a historical setting (Glorikian 3:20-30, 5:37-50, etc). Such devices are typically provided for use within a given theme park, region, historical area, etc (Glorikian 3:20-30, 5:37-50).

Steinberg expressly teaches that such devices are typically rented to a user (4:8- 32) for use in tourist place, theme park, and the like (4:45-55)i Steinberg further teaches that such devices can be restricted such that they only operate within given areas (4:45-60) and the picture taking operation is prohibited from operation outside of the area of use (4:45-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Glorikian / Giniger / Harma to restrict the photo-taking operation to a given zone for at least the reason in order to ensure that the device would not function outside of permitted area (Steinberg 4:45-60).

In regards to claim 2, the same basis and rationale for claim rejection as applied to claim 1 is applied. Glorikian further describes:

The mobile member and.a management terminal that manages the specified space being connected in a communication-allowed manner;

- Glorikian teaches of a server that has local access to a database for storing exhibit

information indexed by location information, which is specifically a management terminal. 3:25-30, discloses, "The service provided is particular to travelers, such as, for example, tourists, who are enabled typically with unique, hybrid hand-held units that are capable of informing server 13 regarding specific geographic location of the units, and therefore the person (client) using each

- unit." 4:8-29, further describe connecting the Server and mobile unit via a cellular telephony network to an Internet service provider. Therefore, the management terminal and the mobile member are connected in a communication-allowed manner.

- 4:40-62 of Glorikian, describes a GPS, which is specifically a location-information acquisition device, incorporated within the mobile unit. 4:63-5:11, further describe transmitting information from the management terminal (server) in response to requests from a portable unit, the request being accompanied by global positioning data defining the position of the unit. Thus, the mobile unit sends the location information obtained by the location-information device to the management terminal.

- 5:26-42 of Glorikian describes the management terminal (server) as having access to a storage device (databases). Additionally, 5:38-42 state, "In a preferred embodiment a service is provided to such as tourists and other travelers, wherein information of for example, historical interest is stored accessible to server 13 and indexed by global position, and in some cases also by dynamics of global position." 7:50-58 describes the indexing of exhibits in an information database according to their location. 8:16-19 and 8:21-39, teaches of determining the location of a user and returning information to the

User relating to the various exhibits according to geographic and spatial positioning.

The information corresponding to the exhibits is indexed in the database according to positional information and accessed according to the location of the user, thus reading upon determining, according to the received location information and the object information stored in the storage device, whether the mobile member is disposed in the inside area of the specified space identified by the shape and location of the virtual object.

In regards to claim 3, the same basis and rationale for claim rejection as applied to claims 1 and 2 are applied to reject the following:

A service providing system according to claim 1, the mobile member and a management terminal that manages the virtual object being connected in a communication-allowed manner; the management terminal includes the storage

- device, and sends the object information stored in the storage device to the mobile member; and the mobile member includes the location-information acquisition device, and when the mobile member receives the object information, the mobile member determines, according to the location information obtained by the location-information acquisition device and the received object information, whether the mobile member is disposed in the inside area of the virtual object identified by the shape and location of the virtual object.

- Glorikian discloses a mobile member and a management terminal including a storage device that manages the virtual object being connected in a communication-allowed manner as applied to claims 1 and 2 above. 9:59-10:8, teach of sending portions of the

database to the user in instances where Internet access may not be readily available on a continuing basis. 10:3-10 states, "The client, having the relevant information stored locally, such as on a flash card, floppy disk, or hard disk drive, may then operate in the specific area, accessing the locally-stored information by real-time GPS position, just as in the Internet-connected situation described above." Thus, the management terminal sends the object information stored in the storage device to the mobile member while the mobile member includes the location-information acquisition device. The mobile member further accesses the stored information with regard to the user's position as described above with claims 1 and 2. Therefore, the mobile member determines, according to the location information obtained by the location-information acquisition device and the received object information, whether the mobile member is disposed in the inside area of the virtual object identified by the shape and location of the virtual object. (Note the discussion in claim 1 concerning the determination that the user is within a specified area (or inside the virtual object) as above)

In regards to claim 4, the same basis and rationale for claim rejection as applied to claims 1 - 3 are applied to reject the following:

A service providing system according to claim 2, wherein, when the result of the determination indicates that the mobile member is disposed in the inside area of the virtual object identified by the shape and location of the virtual object, the management terminal provides service corresponding to the virtual object based on the service information stored in the storage device.

- Glorikian, as applied to claims 1 - 3, teaches of sending service information

corresponding to exhibits according to the position of a user. By indexing the exhibit information with regard to the exhibit's location and sending data to a user with respect to the user's position, Glorikian further teaches of when the result of determining that the mobile member is disposed inside the area of a virtual object identified by the shape and location of the virtual object, the management terminal provides service corresponding to the virtual object based on the service information stored in the storage device.

In regards to claim 5, the same basis and rationale for claim rejection as applied to claims 1 - 3 are applied. Thus, as described in the rejection of claim 3, Glorikian discloses sending the service information stored in the storage device to the mobile member in advance and when "the result of the determination indicates that the mobile member is disposed in the inside area of the specified space, the mobile member provides service corresponding to the specified space based on the received service information.

- **In regards to claim 6**, the same basis and rationale for claim rejection as applied to claims 1 and 2 are applied.
 - 8:35-38 of Glorikian, states, "In this alternative embodiment, the database for the exhibit may be maintained and updated by the host of server 13 with input from the host of the exhibit facility." Thus, the object information in the management terminal (server)may be updated with input from the host of the exhibit facility. It is inherent in the invention of Glorikian that an input device that performs an input related to at least one of generation, deletion, and update of the object information must be present with

regard to the management terminal (server) in order to receive the input from the host of the exhibit facility. Furthermore, it is inherent in the invention of Glorikian that the management terminal (server) comprises an object-information processing device that generates, deletes, or updates the object information according to the content of the input performed by the input device so that the input from the host of the exhibit facility will update and maintain the database for the exhibit.

In regards to claim 7, the same basis and rationale for claim rejection as applied to claims 1 is applied.

• 8:58-61 of Glorikian teaches of pushing information from the server database to the mobile unit of the user, wherein the information may be rendered as speech and announced to the user. Therefore, the service information may be operation information specifying a content of an operation of the mobile member (such as rendering speech to be announced to the user). As described above in the rejections of claims 1 - 6, the information corresponding to various exhibits are supplied to the user device when the location of the user coincides with the indexed positional information of the exhibits. Therefore, when it is determined that the mobile member is disposed in the inside area of the specified space, the mobile member is operated based on the operation information corresponding to the specified space stored in the storage device (database).

In regards to claim 9, the same basis and rationale for claim rejection as ,applied to claims 1 - 7 are applied.

• 5:38-41, 6:63-7:15, teach of supplying a user with a wide variety of service information

related to at least one of a notice and guidance information related to a guidance. Furthermore, 10:10-62 and 11:7-28, describe supplying a user with advertisements and other travel information with regard to the positional information of the user. As described in the claim rejections above, the system of Glorikian supplies service information to a user when it is determined that the user is positioned in a location corresponding to an exhibit or other service.

In regards to claim 10, the same basis and rationale for claim rejection as applied to claims 1 is applied.

• 3:25-30 and 3:54-63, describe the mobile member as being a hand-held unit. 4:1-7, further describe that the mobile member may also be a portable laptop computer. Therefore, the mobile member of Glorikian is a portable terminal.

In regards to claim 11, the same basis and rationale for claim rejection as applied to claims 1 - 10 are applied.

• Determining the location of the mobile unit and sending the corresponding indexed service information to the mobile unit in response to the mobile unit's location in Glorikian is providing service corresponding to the specified space based on a positional relationship between a movable mobile member and the specified space. 8:27-37 further describes providing the user with service information according to a predetermined condition according to the positional relationship between the mobile member and the specified space.

8:29-34 state, For example, the fact of a user traversing from one room to another may elicit information pertaining to the nature of exhibits in the room being

approached, while the fact of a user stopping for a predetermined time before a specific exhibit may elicit information about that specific exhibit, and so forth." Thus, the mobile member is operated based on the operation information (such as rendering speech to be announced to the user) when the positional relationship between the mobile member and the specified space satisfies a predetermined condition.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

In regards to claim 12, the same basis and rationale for claim rejection as applied to claims 6 and 11 are applied. The rejection to claim 1 is incorporated by reference~ However, the limitation in the preamble concerning 'disposing the virtual object in a virtual space' and 'constructing on a computer' the space in question is not expressly taught by Glorikian in that it requires an input device for performing the construction. Glorikian does not expressly teach an input device for configuring the database, but this is fairly suggested as described in the Remarks for Arguments. It would have been

obvious to one of ordinary skill in the art at the time the invention was made to modify Glorikian to have an input device to update the database for at least the reasons set forth in the Response to Arguments section.

Glorikian teaches all of the limitations except explicitly stating that the server has an input device for generating such data. However, Glorikian teaches an input device for a user system in Figure 2 as element 59, discussed in 8:15-30, where the database containing the positional information can be updated by the owner of the facility, which would render obvious the input device limitation, since such a owner must *prima facie* have a way of inputting new locations for exhibits and the like. The database of Glorikian in 8:15-30 clearly constitutes a storage device, and since the owner of a facility would designate various regions as having specific data associated with them (e.g. 8:15-30, Figure 3 (7:25-67), 5:40-6:40, and the like), and this would be shown on a monitor or in some other manner so that the user could determine what region, area, and/or volume was being selected, which would constitute 'generating data for the virtual object'. The storage device must register the volumes (8:15-30, 7:25-67, Figure 3, etc) in order to function correctly, and must associate the region with specific data, e.g. as in the Figure 3 case, associate data about a specific exhibit with the space immediately in front of it, or the information about the rubbish pit and Martin's Hundred in the Jamestown example. Therefore, as established above, Glorikian at least fairly suggests and implicitly teaches such an input device. The reasons for having it are set forth above, as it would be necessary for the functioning of the system, and would allow the user to create and update new virtual spaces, since such a system would not

function without some method for the user to enter changes into the system (e.g. an input device). Also, examiner takes Official Notice that such a limitation is notoriously well known in the art, and that the motivation for having such a device would be to allow the owner to define the various virtual areas in front of exhibits and site-to-site information as per Figure 3 and the like.

In regards to claim 13, the same basis and rationale for claim rejection as applied to claim 2 are applied. 3:25-30 and 3:54'4:7 of Glorikian teach of a terminal connected to the mobile member used to perform the functions of the service providing system according to claim 2.

In regards to claim 14, the same basis and rationale for claim rejection as applied to claims 1 - 3 are applied.

In regards to claim 15, the same basis and rationale for claim rejection as applied to claim 1 is applied. 5:12-17 and 6:15-17, of Glorikian teach of software running on the mobile terminal unit and the server for performing the functions of the invention. Thus, Glorikian additionally discloses a service.providing program.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

In regards to claim 16, the same basis and rationale for claim rejection as applied to claims 7, 11, and 15 are applied.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

In regards to claim 17, the same basis and rationale for claim rejection as applied to claims 12 and 16 are applied.

However, the limitation in the preamble concerning 'disposing the virtual object in a virtual space' and 'constructing on a computer' the space in question is not expressly taught by Glorikian in that it requires an input device for performing the construction.

Glorikian does not expressly teach an input device for configuring the database, but this is fairly suggested as described in the Remarks for Arguments. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Glorikian to have an input device to update the database for at least the reasons set forth in the Response to Arguments section.

Glorikian teaches all of the limitations except explicitly stating that the server has an input device for generating such data. However, Glorikian teaches an input device for a user system in Figure 2 as element 59, discussed in 8:15-30, where the database containing the positional information can be updated by the owner of the facility, which would render trivially obvious the input device limitation, since such a owner must prima facie have a way of inputting new locations for exhibits and the like. The database of Glorikian in 8:15-30 clearly constitutes a storage device,, and since the owner of a facility would designate various regions as having specific data associated with them (e.g. 8:15-30, Figure 3 (7:25-67), 5:40-6:40, and the like), and this would be shown on a monitor or in some other manner so that the user could determine what region, area, and/or volume was being selected, which would constitute 'generating data for the virtual object'. The storage device must register the volumes (8:15-30, 7:25-67, Figure 3, etc) in order to function correctly, and must associate the region with specific data, e.g. as in the Figure 3 case, associate data about a specific exhibit with the space immediately in front of it, or the information about the rubbish pit and Martin's Hundred in the Jamestown example. Therefore, as established above, Glorikian at least fairly suggests and implicitly teaches such an input device. The reasons for having it are set forth above, as it would be necessary for the functioning of the system, and would allow the user to create and update new virtual spaces, since such a system would not function without some' method for the user to enter changes into the system (e.g. an input device). Also, examiner takes Official Notice that such a limitation is notoriously well known in the art, and that the motivation for having such a device would be to allow

the owner to define the various virtual areas in front of exhibits and site-to-site information as per Figure 3 and the like.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

The relevant sections of the Response to Arguments section are also incorporated by reference.

In regards to claim 18, the same basis and rationale for claim rejection as applied to claim 15 is applied.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

In regards to claim 19, the same basis and rationale for claim rejection as applied to claim 16 is applied.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

In regards to claim 20, the same basis and rationale for claim rejection as applied to claim 17 is applied.

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

As to claim 21,

Glorikian teaches all of the limitations except explicitly stating that the server has an input device for generating such data. However, Glorikian teaches an input device for a user system in Figure 2 as element 59, discussed in 8:15-30, where the database containing the positional information can be updated by the owner of the facility, which would render trivially obvious the input device limitation, since such a owner must prima facie have a way of inputting new locations for exhibits and the like. The database of Glorikian in 8:15-30 clearly constitutes a storage device, and since the owner of a facility would designate various regions as having specific data associated with them (e.g. 8:15-30, Figure 3 (7:25-67), 5:40-6:40, and the like), and this would be shown on a monitor or in some other manner so that the user could determine what region, area, and/or volume was being selected, which would constitute 'generating data for the virtual object'. The storage device must register the volumes (8:15-30, 7:25-67, Figure 3, etc) in order to function correctly, and must associate the region with specific data, e.g. as in the Figure 3 case, associate data about a specific exhibit with the space immediately in front of it, or the information about the rubbish pit and Martin's Hundred in the Jamestown example. Therefore, as established above, Glorikian at least fairly suggests and implicitly teaches such an input device. The reasons for having it are set forth above, as it would be necessary for the functioning of the system, and would allow the user to create and update new virtual spaces, since such a system would not function without some method for the user to enter changes into the system (e.g. an input device). Also, examiner takes Official Notice that such a limitation is notoriously

well known in the art, and that the motivation for having such a device would be to allow the owner to define the various virtual areas in front of exhibits and site-to-site information's as per Figure 3 and the like.

As to claim 22, this claim is identical to that of claim 21, the rejection to which is incorporated by reference.

As to claims 23-26, the appropriate rejections of the parent claims (15-16 and 18- 19) are incorporated by reference as necessary.

A computer clearly performs the methods of Glorikian. A computer *prima facie* requires a computer program, and as noted above, Glorikian teaches such an input device with generation by (for example) the owner of such a facility, and clearly the rejection to claim 21 above, which is incorporated by reference, teaches the input device (e.g. generating data for the virtual object by designating the region and/or volume associated with a specific exhibit or the like). The database is automatically transmitted to a storage device (since a database *prima facie* requires storage). Motivation and rationale for such a modification / combination is taken from the rejection to claim 21, which was incorporated by reference.

Claim 8 is-rejected under 35 U.S.C. 103(a) as being unpatentable over Glorikian in view of Giniger, Harma, and Steinberg as applied to claim 1 above, and further in view of U.S. Patent No. 6,326,918 to Stewart.

In regard to claim 8, the same basis and rationale for claim rejection as applied to claim 1 is applied. Glorikian discloses providing a wide variety of information to a user

based on positional information of an exhibit and the user's location. 6:63-7:15, describes a plethora of services that may be provided to the user from the management terminal (server). 8:58-61 further describes sending information that may be rendered as speech and announced to the user, while Columns 10 ~and 11 describe providing the user information regarding advertisements and other service information. However, although it is well known to transmit video data over a network from a central server to a mobile device for providing information to a user, Glorikian does not explicitly teach of providing information to the user in the form of characters, images, or video. The system of Stewart discloses a method and apparatus for providing service information to a mobile unit based on the proximity of the device to a service access point (2:56-65). Stewart discloses that the service information specifying a content of service in which media information related to at least one of characters, images, and video is provided for the mobile member (4:13-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glorikian to include providing service information comprising at least one of characters, images, and video to the user as in Stewart. One would have been motivated to make such a modification to Glorikian so that video information describing the exhibition in a museum can be provided on the display (element 65 of Figure 1) of the user's mobile device. By allowing both speech rendering and video display to a user, the system of Glorikian may be made more accessible to handicapped users such as blind users who may use the audio information or deaf users who must use the video

information to access data for an exhibit. In addition, all references are directed to providing information on a mobile unit/device over a wireless network interface.

Claims 27-29 are rejected under 35 USC 103(a) as unpatentable over Glorikian in view of H6llerer et al (H6llerer, T; Feiner, S; Terauchi, T; Rashid, G; Hallway, D. "Exploring MARS: developing indoor and outdoor user interfaces to a mobile augmented reality system." 1999: Comp & Graph 23, 779-785:) and Durst et al (US 6,235,358 B1).

As to claims 27-29 (computer-implemented method, system, computer program product, Glorikian clearly implements the method on a 'computer using software 42, which is such a computer program implemented on a computer-containing system executing the method, see Figure 2),

Glorikian teaches the following limitations:

A service providing system for correlating service to a virtual object which is data having spatial information, relating to shape and location, constructed on a computer corresponding to a specified space, for disposing the virtual object in a virtual space associated with an actual space in the specified space, and for providing service corresponding to the specified space according to a positional relationship between a movable mobile member and the virtual object, comprising: (Glorikian clearly teaches that areas or more specifically volumes (e.g. see 7:45-60) that have properties. See 5:40-6:40, where for the example of Jamestown, the user would be sent information specific to the area that the user is located inside; see for example the Martin's Hundred area, where when the user

approaches a specific object or location (e.g. rubbish pit), the user would get very specific information when the user is within a virtual space associated with a virtual object, e.g. 6:1-5 states that when the client is in the general Martin's Hundred area, they get general information, but when they move closer to the house or the rubbish pit they get more and more specific information. Clearly, in 2:9-37, the data repository distributes data based on determined position, and in 2:38-45, the device stores information cross-referenced to geographic position in a data repository.)

-A storage device that associates object information related to the spatial information of the virtual object with service information specifying a service content, and that stores the object information and service information; and (Glorikian discloses a database, which is specifically a storage device, for storing information about all the exhibits at a museum that may be indexed according to geographic location in the buildings (Column 7, lines 36- 42). Clearly 9:59-10:10 clearly sets forth that the user may store such information locally. Further, 7:25-42 expressly states that information may be indexed by geographic location within the buildings, and in 7:42-60, it is clearly stated that these exhibits are located within a three-dimensional coordinate system homed to some point within the building. Note ESPECIALLY 8:15-35, where moving from one room to another will trigger a change in information, and moving in front of a specific exhibit will cause specific information concerning that exhibit to be displayed. Clearly, in 8:15-25 the virtual space (e.g. the mapping of the exhibits with some arbitrary coordinate system in three dimensions) does exist, and is mapped to a specific facility, where 8:35-39 clearly states that the

exhibit list may be updated and maintained by the host of the facility.)

-When it is determined according to the object information stored in the storage device that the positional relationship between the mobile member and the specified space satisfies a predetermined condition, the service corresponding to the specified space is provided based on the service information stored in the storage device (Glorikian - Column 4, lines 40 - 62 of Glorikian, teaches of including a GPS device on a mobile unit for determining the location of the unit, and additionally in Figure 2 there is secondary receiver 77 - see 7:56-8:35, where secondary receivers for establishing positions indoors when GPS signals cannot be received, Column 8, lines 16 - 19 and lines 21 -26 of Glorikian, teaches of determining the location of a user and returning information to the user relating to the various exhibits according to geographic and spatial positioning. Column 7, lines 36 - 42, states, "For the purposes of this invention, information about all of the exhibits at thismuseum may be indexed according to geographic location in the buildings, which may be accessed selectively if one has a portable unit requesting such information from a database while simultaneously reporting the device's relatively precise position in the museum." Therefore, providing information to a user based upon their position in the museum is equivalent to providing service corresponding to the specified space. Column 6, lines 63 - 67, and Column 7, lines 1 - 15, describe the various services available to a user with regard to location information. Thus, the information provided to a user is provided .according to the service information stored in the storage device. Additionally, the service information provided by Glorikian is indexed according to positional information and accessed according to the location of the user,

thus reading upon determining according to the location information obtained by the location-information acquisition device and the object information stored in the storage device that the mobile member is disposed in an inside area of the specified space identified by the shape and location of the virtual object.) (Note further that in Figure 3, there are several exhibitions on that particular floor being shown - e.g. they have a common reference location schema (coordinates) - see 7:45-60. Next, note Glorikian states clearly "In other embodiments there may be a three-dimensional reference system, allowing for differentiation of exhibits of a multi-storied exhibit site, or any known sort of planar or spatial reference." This clearly shows that location information is obtained in three dimensions.)

Glorikian partially teaches the following limitations, but fails to expressly teach the creation, generation, and deletion portions:

-When it is determined according to the object information stored in the storage device that the positional relationship between the input device and the specified space satisfies a predetermined condition, the object-information processing device performing at least one of generation, deletion, and update of the at least one of the object information and the service information according to the content of the input performed by the input device. (Glorikian would suggest that events in a facility could change over time (e.g. visiting exhibits in a museum (7:34-36), where the database containing such information is maintained and updated by the owner of the facility and/or the provider of the service (8:29-38). Glorikian teaches that such information is downloaded from the wireless network (4:63-5:10). Therefore, Glorikian teaches time- and location-based

advertising information (10:35-11:5), where such advertising is updated as the user moves between areas, it clearly teaches updating information over time based on client location and time (e.g. the lunch time advertisements).

This discussion is in reference to Figure 3, where the user is inside a building and moving between various locations. Further, 7:25-42 expressly states that information may be indexed by geographic location within the buildings, and in 7:42-60, it is clearly stated that these exhibits are located within a three-dimensional coordinate system homedto some point within the building. Note ESPECIALLY 8:15-35, where moving from one room to another will trigger a change in information, and moving in front of a specific exhibit will cause specific information concerning that exhibit to be displayed. Clearly, in 8:15-25 the virtual space (e.g. the mapping of the exhibits with some arbitrary coordinate system in three dimensions) does exist, and is mapped to a specific facility, where 8:35-39 clearly states that the exhibit list may be updated and maintained by the host of the facility.

Specifically, the "virtual space" required is the exhibit map as in 8:15-38 and shown in Figure 3 (at a museum, for example, e.g. art museum as in 7:25-40). It has its own coordinate system 7:50-58. The physical space is the real building. The mapping between the two is the database as discussed in 8:i5-38. This clearly means that every exhibit has its own parameters and its own space. Again, the recited• shape and location of the virtual object constitutes the area or volume occupied by the exhibit, elg. when the user is within a specified distance of the exhibit, the user gets extremely fine, granular information (outdoors for the rubbish pit example, 5:65-6:15; indoors for an

exhibition, getting exhibit-specific information in 8:28-38). The owner of such a 'facility' would lay out the areas for the database to provide information to the user, which would clearly constitute 'shape and location' for the exhibit in question, and that defined area, region, and/or volume would constitute a virtual object which would be labeled with information concerning that specific object.

Glorikian fails to teach, but HOllerer teaches:

-A mobile input device that performs an inputrelated to at least one of the object information and the service information related to the virtual Object; and (H~llerer teaches the MARS system in Figure 2 with handheld computer in Figure 3 and similar system for indoor purpose in Figure 4(b)- see description of system in section 2, pages 781-782. See specifics for outdoors MARS UI unit, etc in section 3.1, pages 782-783; see specification for handheld input portion (e.g. Figure 3) in section 3.2, page 783; see specification for immersive indoor unit (Figure 4(b)) in section 3.3, page 783. Input device allows user to perform operations such as section 3.4, "New virtual objects can be introduced by any UI, and when moved around, their position is updated in all participating UIs..." e.g. user can create something (in this case just path as in 5(a)-(c)) - An object-information processing device that performs the at least one of the object information and the service information relating to the virtual object according to the content of the input performed by the input device; (MARS system as described in Figure 2 has hardware that performs the setting step and shows it in the displays such as in Figures 5(a)-(c), etc, whereJthis is made visible)

Glorikian and H011erer (H011erer does teach mobile unit with path capabilities, see for

example page 783, section 3.2. which can be used with outdoor MARS UI, and the indoor system, as in fully immersive Figure 4(b) section 3.3. page 783, can also adjust things) fail to expressly teach, but Durst teaches generation, update, deletion of object information and service information for virtual object - that is, Durst teaches a mobile device that can be utilized to create, update, and generated virtual objects - 6:46-7:15 mobile item / thing is utilized to create perimeter / boundary for bounding region and the like. Perimeter can be updated as therein.

Glorikian teaches most of the limitations of the instant claim but does not expressly teach providing an input device for construction, generation, updating, and deletion of a virtual object. At most it can be regarded as teaching that events have durations and that information can be changed over time; that is, that the virtual objects (areas / volumes) can be updated and/or deleted in the database by the owner of the facility. Further, it teaches that advertising can be done on a position- and time-of-day- based basis (10:5-11:15).

Holierer is cited for the express purpose of teaching of the use of a mobile computing system for outdoors use capable of inputting information concerning region and the like for a space. It is only Cited for the above specific purpose.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Glorikian to allow the user to have the system of HSilerer that allows for entering, e.g. input, of interactive information concerning placement and the like, which is capable of communicating with other users, because this greatly enhances the utility of such a system, and enhances collaborative

capabilities (see pages 783-784, sections 3.2 - 4). Also allows users to more efficient use such data and enhance the collaboration (see section 4).

it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Glorikian and H(511erer to allow user to create andmodify zone / boundary information for specifying the region and changing it as necessary, which allows on-site setting of the region, which has the benefits set forth in Durst, such as the tracking, the programmability, and ability to specify coordinates in different manners and construct thearbitrary shape (see 6:45-7:15, benefits therein and 1:62-2:45; 8:10-25; 9:30-45; etc).

Applicant amends the claim to include a new feature "the shape of the virtual object including a sphere or a cube." As argued above, in Glorikian, the owner's lay-out areas, that defined region or volume of the virtual object, constitute specific shapes of the virtual objects. For example, in column 7, lines 46-49, the exhibit room has been defined by its own coordinates in 3D coordinate system as a box. Such shape of the exhibit room are clearly in any possible shapes such as a cube, a sphere, ... without any significant modification from Glorikian disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (571) 272 7645. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272 7664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Phu K. Nguyen
February 12, 2008



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